USPAS PHY 671

CONTROL ROOM ACCELERATOR PHYSICS

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Course Objectives

Accelerator physics in general, and accelerator control in particular, require diverse areas of expertise; it is the epitome of multi-disciplinary activity.

- Cover commissioning tasks for accelerators. Software tools are built to support this tasks.
- Demonstrate software engineering and development techniques for building these tools. We use Open XAL as a vehicle.
- Introduce basic material from linear algebra, control theory, and accelerator physics to provide theory for designing applications.

Daily Schedule

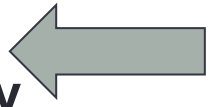
- 9:00 AM – 12:00 PM: Lectures
- 12:00 PM – 1:30 PM: Lunch Break
- 1:30 PM – 5:00 PM: Computer Laboratory (apply lecture material)
- 8:00 PM – 10:00 PM: “Office Hours” Instructors available for Hmk

Computer assignments

- Instructors present

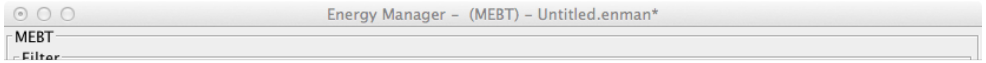
Daily Homework: Consists of computer and written assignments

Final Exam on the morning of Friday, January 31, 2014. Consists of both a written part and a computer laboratory part.



Computer Projects

Daily computer assignments consist of building an Open XAL-based application



- Additional features added each day
- Start from a new application “stub” provided each day
- Final result will be a working application for diagnosing misalignments
- Managing your project is part of the assignment!

Grading

- Breakdown
  - 33% - Daily computer projects
  - 33% - Daily written assignments
  - 33% - Final exam (both computer and written)

Schedule Synopsis

	Monday	Tuesday	Wednesday	Thursday	Friday
9:00 AM to 12:00 PM	**Lecture** Course Overview Accel. Systems XAL Overview	**Lecture** Linear Systems Beam Optics Online Model	**Lecture** Software Engr. Software Arch. XAL Solver	**Lecture** Acceleration & Commissioning Applications	**Review** **Q&A** **Final Exam**
1:30 PM to 5:00 PM	**Lab** Install XAL Connect to VA Begin Hmk	**Lab** SMF Online Model Cont. Appl.	**Lab** Solver Cont. w/ App.	**Lab** Putting it all together Finish App	
7:00 PM …	**Homework** Written Computer	**Homework**	**Homework**	**Homework**	